
 T P S - S O U S E R S G R O U P
 N E W S L E T T E R

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FAST T-BUG RELOADER

Everett Ogden
 175 Adams Street
 Delmar, NY 12054

Those of you with Radio Shack's T-BUG program have probably been aggravated more than once by finding yourself unceremoniously dropped back into BASIC, or by getting locked up in a program and having to reset the machine. You then have to reload T-BUG, which takes about half a minute. The program is still there (well, most of it) but you can't get back to it without a cassette load. This change to T-BUG will allow you to do that, and repair the damage done by the BASIC monitor, by reloading just two bytes.

First it is necessary to understand how the computer knows it should run T-BUG after loading it, instead of returning to the BASIC monitor. There is nothing in the CLOAD routine to do this. It calls the subroutine CLOAD0 (which does the actual loading), performs a few other manipulations, and returns to the BASIC monitor. I had to cogitate on this a while (I'm new at this game) but I finally got it. I'll admit the people who designed this are pretty clever. When the subroutine is called, the return address is pushed onto the stack. Level I initializes its stack at 4200, and when CLOAD0 is called the return address is stored at 41FE and 41FF. BASIC programs start at 4200, but T-BUG runs from 4091 to 43B6 and overwrites the stack. It changes the return address to 40B1, which is the start of T-BUG.

If you get into BASIC you could return to T-BUG with a CLOAD of address 40B1 into the proper location. However, this leaves two problems. CLOAD0 loads a checksum after the last data byte (at 4200 in this case). Also, the BASIC monitor alters certain memory locations near the start of T-BUG. These changes are repaired by the program below. It occupies memory space not used by T-BUG. Level I uses the space to store variables Q through Z, A\$, and B\$.

Load T-BUG and write this program at 4070:

4070	01 28 00	LD BC, 0028
4073	11 40 40	LD DE, 4040
4076	21 91 40	LD HL, 4091
4079	ED B0	LDI R
407B	21 00 42	LD HL, 4200
407E	36 32	LD M, 32
4080	C3 B1 40	JP 40B1

Run this program, which moves 40 bytes beginning at 4091 to 4040. Then change 4073 to 21 and 4076 to 11. Change 41FE and 41FF to 70 40. Now punch 41FE to 41FF, preferably at the head of a leaderless tape to make it easy to find. Finally, punch 4040 to 43B6, which is your new T-BUG. If you find yourself in BASIC you need only rewind the cassette to the head and a CLOAD will put you back into T-BUG in seconds. If you dive into the middle of the ROM or try to do anything in BASIC before returning to T-BUG, there is no telling what damage may be caused. Then you'll just have to reload the complete version of T-BUG.

CORRECTION TO
FAST T-BUG RELOADER

My fast reloader program depends in part on repairing the damage done to T-BUG by a return to the BASIC monitor. I have found that the patch in the original version isn't quite big enough. The following version repairs 4091 to 40B8. It includes 13 bytes of the line buffer (which begins at 40AC); this corrects the changes caused by entering the CLOAD command.

Load T-BUG and write this program at 4070:

4070	01 28 00	LD BC, 0028
4073	11 40 40	LD DE, 4040
4076	21 91 40	LD HL, 4091
4079	ED B0	LDIR
407B	21 00 42	LD HL, 4200
407E	36 32	LD M, 32
4080	C3 B1 40	JP 40B1

Run this program, which moves 40 bytes beginning at 4091 to 4040. Then change 4073 to 21 and 4076 to 11. Change 41FE and 41FF to 70 40. Punch 41FE to 41FF (the fast reloader). Finally punch 4040 to 43B6, which is your new T-BUG.

As far as I can tell, this fixes all problems caused by a simple return to the BASIC monitor. Of course, if you dive into the middle of the ROM or try to do anything in BASIC before returning to T-BUG, there is no telling what damage may be caused. Then you'll just have to reload the complete version of T-BUG.

NEW#: LEVEL I
PROGRAM RENUMBERER

Everett B. Ogden
175 Adama Street
Delmar, NY 12054

When you modify a program, you may find you haven't left enough space between line numbers to add all the new lines you want. Even if you have, you may want the final version to have line numbers with equal increments. It gives a cleaner look to the program, as though you had written it the right way the first time. If you have T-BUG, you can generate a machine language program which will renumber a BASIC program.

Level I stores programs starting at 4200. Each line consists of the line number in two-byte binary form and the text in ASCII, ending with a carriage return (OD). NEW# finds the carriage returns and fills the next two bytes with the new line number.

In order to load NEW# without disturbing the BASIC program, it must be loaded below 4200. The last two bytes, at 41FE and 41FF, tell the computer to jump to the start of the program after loading it.

Since NEW# overwrites part of T-BUG (including part of the PUNCH routine) it must be written above 4400, block-moved to its proper location, then saved on tape under control of a loader program. Load T-BUG, then write NEW# and its loader starting at 4400. Before running it, save it using T-BUG's PUNCH command. This will allow you to modify it later if you want to. Next set up your recorder to record, and jump to 4400. The program will return to the BASIC monitor when it is finished.

To use NEW#, load a BASIC program. Now load NEW# with the CLOAD command. Do not type NEW. The program will run automatically after loading and will end with a return to the BASIC monitor. When you call for a listing, you will find the BASIC program unchanged except that the line numbers are now evenly spaced in increments of ten. To change the increment, change the value loaded into register pair BC (see 4426). Don't forget to rewrite lines with GOTO or GOSUB instructions to agree with the new line numbers.

```

NEW# (loader 4400-4416)
4400 21 20 44 LD HL, 4420 ;move block from 4420-
4403 11 D0 41 LD DE, 41D0 ;444F to 41D0-41FF
4406 01 30 00 LD BC, 0030
4409 ED B0 LDIR
440B CD E9 0F CALL OFE9 ;CTON
440E 21 D0 41 LD HL, 41D0 ;start of block
4411 CD 4B 0F CALL OF4B ;CSAVEO
4414 C3 66 00 JP, 0066 ;jump to BASIC monitor

```

4417-441F: don't care

```

4420 31 90 40 LD SP, 4090 ;initialize stack
4423 21 00 42 LD HL, 4200 ;start of BASIC program
4426 01 0A 00 LD BC, 000A ;increment (+10)
4429 11 00 00 LD DE, 0000 ;address line #
442C EB EX DE, HL ;
442D E5 PUSH HL ;last line #
442E 2A 6C 40 LD HL, (406C) ;end of BASIC prog. +1
4431 E7 RST 20 ;Z=1 if HL=DE (done)
4432 CA 66 00 JPZ, 0066 ;BASIC monitor
4435 E1 POP HL ;last line #
4436 09 ADD HL, BC ;increment
4437 EB EX DE, HL ;DE = new line #
4438 73 LD M, E ;HL points to next # to
4439 23 INC HL ;be changed. Load D & E
443A 72 LD M, D ;into next two bytes
443B 23 INC HL
443C 3E 0D LD A, 0D ;carriage return
443E BE CP M ;find next CH+1
443F 23 INC HL
4440 20 FC JRNZ, -4 ;to 443E
4442 18 E8 JR, -24 ;to 442C

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4444-444D: don't care

```

444E D0 41 ;'return' address

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RADIO STATIONS

IF ANY BROADCASTERS HAVE THE TRS-80 OR PROGRAMS, I WOULD LIKE TO GET IN CONTACT WITH YOU.

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FAYETTEVILLE, NC 28302
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```

5 CLS
10 PRINT AT 22, "*** NOT-ONE ***"
20 REM BY STAN OCKERS 9-70
25 PRINT : PRINT : PRINT
30 PRINT "DO YOU WANT INSTRUCTIONS (YES (Y) OR NO (N))"
40 Y=1 : N=2 : INPUT Q : IF Q=2 GOTO 200
50 IF Q>1 GOTO 30
60 CLS:PRINT "YOU AND THE COMPUTER TAKE TURNS ROLLING PAIRS OF DICE "
70 PRINT "THERE ARE TEN ROUNDS. YOU MAY ROLL AS MANY TIMES IN ONE"
80 PRINT "ROUND AS YOU WISH. HOWEVER, IF YOU REPEAT THE SAME"
90 PRINT "NUMBER AS YOU ROLLED AT THE BEGINNING OF THE ROUND"
100 PRINT "YOU WILL LOSE ALL POINTS FOR THAT ROUND. THE COMPUTER"
110 PRINT "WILL THEN TAKE ITS TURN FOLLOWING THE SAME RULES."
120 PRINT "THE WINNER IS THE ONE HAVING THE MOST POINTS "
130 PRINT "AFTER TEN ROUNDS. GOOD LUCK!"
140 PRINT : PRINT "PRESS ENTER WHEN YOU ARE READY TO START."
150 INPUT A$
190 REM * DRAW DICE - SET UP ARRAY *
200 DATA 0,25,28,45,60,85,88,105,0,9,24,25,28,29,44,45,68,69,84
210 DATA 85,88,89,104,105,392,326,458,330,454,390,394,402,336
220 DATA 468,340,464,400,404,422,356,488,360,484,420,424,432,366
230 DATA 490,370,494,430,434
240 CLS : Y=13 : GOSUB 290 : RESTORE
245 Y=25 : GOSUB 290
250 FOR I=1TO16:READ X:FOR Y=14TO25:SET(X,Y):NEXT Y:NEXT I
260 FOR I=1TO28 : READ A(I) : NEXT I
270 GOTO 300
290 FOR I=1TO4 : READ A,B : FOR X=A TO B : SET(X,Y):NEXT X:NEXT I:RETURN
300 REM * INITIALIZE COUNTERS *
310 R=0 : Z=0 : X=0
320 R=R+1 : IF R=11 THEN 600
325 PRINT AT 920, "ROUND NUMBER ";R
330 REM * PLAYERS DICE *
335 T=0 : H=1 : PRINT AT 700, "ROLL # 1";
340 F=0 : GOSUB 390 : F=T : PRINT AT 644, "FIRST ROLL = ";F;
350 PRINT AT 6, "ROLL AGAIN ", : INPUT Q : IF Q=2 THEN 400
355 H=H+1 : PRINT AT 700, "ROLL # ";H;
360 GOSUB 390 : IF A+B=F THEN 380
370 GOTO 350
380 PRINT AT 6, "SORRY, YOU ROLLED ANOTHER ";F
385 FOR J=1TO2000 : NEXT J : GOTO 400
390 O=0 : GOSUB 900 : A=D : O=7 : GOSUB 900 : B=D : T=T+A+B
395 IF A+B=F THEN T=0
399 PRINT AT 772, "ROUND TOTAL = ";T; : RETURN
400 X=X+T : PRINT AT 196, "YOUR TOTAL = ";X;
410 PRINT AT 6, "COMPUTER'S TURN"
415 REM * COMPUTER'S DICE *
420 T=0 : F=0 : GOSUB 490 : F=T:PRINT AT 674, "COMPUTER'S FIRST = ";F;
425 H=1 : PRINT AT 738, "ROLL # 1";
430 IF (F=2)+(F=12) THEN L=28
435 IF (F=3)+(F=11) THEN L=9
440 IF (F=4)+(F=5)+(F=6)+(F=9)+(F=10) THEN L=6
445 IF (F=7)+(F=8) THEN L=4
450 M=0 : FOR J=1TO2000 : NEXT J
460 GOSUB 490 : IF A+B=F THEN 500
470 M=M+1 : IF M=L THEN 500
480 H=H+1 : PRINT AT 738, "ROLL # ";H;
485 FOR J=1TO2000 : NEXT J : GOTO 460
490 O=14 : GOSUB 900 : A=D : O=21 : GOSUB 900 : B=D : T=T+A+B
495 IF A+B=F THEN T=0
499 PRINT AT 802, "ROUND TOTAL = ";T; : RETURN
500 Z=Z+T : PRINT AT 226, "COMPUTER'S TOTAL = ";Z;

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520 GOTO 320
600 CLS PRINT "FINAL SCORE YOU, ",X;" COMPUTER, ",Z
610 IF Z>X THEN 670
620 IF Z=X PRINT "IMPOSSIBLE ... A TIE !!!"
625 IF Z=X THEN 700
630 PRINT "FANTASTIC JOB !! YOUR A GENIUS !!": GOTO 700
670 PRINT "TOUGH LUCK ... MAYBE NEXT TIME ..."
675 GOTO 700
700 Y=1 : PRINT : PRINT : INPUT "WANT TO TRY AGAIN (Y) OR (N)";Q
710 IF Q=1 THEN 200
720 PRINT "YOU PLAYED WELL. I HOPE WE CAN PLAY AGAIN SOMETIME."
730 END
900 FOR P=1TO7 :PRINT AT A(P+0)," "; : NEXT P
920 D=RND(6) : IF (D=1)+(D=3)+(D=5) THEN 970
930 FOR P=2 TO D+1 : PRINT AT A(P+0),"*"; : NEXT P
940 GOTO 900
970 FOR P=1TO0 : PRINT AT A(P+0),"*"; : NEXT P
980 PRINT AT 0; : RETURN

```

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TRS-80 USERS GROUP

I GOT MY LEVEL II ABOUT 2 MONTHS AGO AND THINK IT IS GREAT. MUCH BETTER THAN LEVEL I (I RECOMMEND GETTING IT) HERE IS A PROGRAM WHICH USES THE EXTRA COMMANDS OF LEVEL II

DID YOU EVER WANT YOUR TRS-80 TO MAKE SOME NOISE. WELL THIS IS HOW TO DO IT. THE CASSETTE RECORD LINE CAN BE USED AS A TONE GENERATOR IF A MACHINE PROGRAM IS USED. THIS MUSIC PROGRAM DOES JUST THAT, YOU CAN USE THE CASSETTE RECORDER TO RECORD THE MUSIC BY PRESSING PLAY AND RECORD (REMOVE THE REMOTE PLUG TO ALLOW IT TO RUN). I HAVE ALSO USED A AMPLIFIER TO PLAY THE MUSIC ON SPEAKERS. HERE ARE SOME OTHER THINGS I HAVE LEARNED ABOUT THE OUTPUT PORT:

1. THE ONLY PORT AVAILABLE WITH OUT THE EXPANSION UNIT IS PORT 255. THIS PORT CONTROLS THE CASSETTE.
2. USE THE 'OUT' COMMAND TO CONTROL THE PORT IN BASIC.
3. BITS 0 AND 1 ARE USED TO MAKE THE TONES FOR THE RECORDING
4. BIT 3 IS USED TO CONTROL THE RELAY. THIS CAN BE USED FOR OTHER THINGS BESIDES CONTROLLING THE CASSETTE.
OUT 255,4 WILL CLOSE THE RELAY
OUT 255,0 WILL OPEN THE RELAY
5. BIT 4 IS USED TO DISPLAY 32 CHARACTORS ON THE SCREEN THIS DOES NOT CHANGE THE STORAGE TO EVERY OTHER CHARACTOR HOWEVER. THERE MUST BE ANOTHER CHANGE IN THE BASIC RAM.
6. THE OTHER BITS ARE NOT USED

TONES CAN NOT BE GENERATED WITH A BASIC PROGRAM BECAUSE OF THE SPEED REQUIRED. THE MACHINE PROGRAM CAN BE SIMPLIFIED IF ONLY A SINGLE FREQUENCY OF SHORT DURATION IS REQUIRED

I HOPE YOU ENJOY THIS PROGRAM AND CAN PUT IT TO USE.

DEAN MCCULLOCH
37202 MANCHESTER
STERLING HTS, MI 48077

```

1 / MUSIC
2 / BY DEAN MCCULLOCH
3 / MACHINE CODE LOCATED FOR 4K RAM
9 / 10-100 LOADS MACHINE PROGRAM AND SETS UP USR
10 FOR I=20336 TO 20374
20 READ A
30 POKE I, A
40 NEXT I
50 DATA 205, 127, 10, 14, 255, 6, 1, 205, 136, 79, 6, 2, 205, 136, 79
60 DATA 43, 62, 0, 180, 181, 194, 117, 79, 201, 237, 65, 237, 91, 159, 79
70 DATA 27, 62, 0, 178, 179, 194, 142, 79, 201
90 POKE 16526, 112
100 POKE 16527, 79
101 / FQ= THE FREQUENCY OF THE TONE DESIRED
102 / TM= THE DURATION OF THE TONE IN SECONDS
109 / READ NOTE
110 READ FQ, TM
114 / FIND NUMBER OF CYCLES TO PLAY
115 CY=INT(FQ*TM)
119 / CHECK FOR FREQUENCY OUT OF RANGE
120 IF FQ>5000 THEN FQ=5000
125 IF FQ<50 THEN FQ=50
129 / 130-170 FIND AND STORE HALF WAVE TIME DURATION
130 D%=0 : DE%=29480/FQ
140 IF DE%>512 THEN D%=2 : DE%=DE%-512
150 IF DE%>256 THEN D%=D%+1 : DE%=DE%-256
160 POKE 20383, DE%
170 POKE 20384, D%
189 / CALL MACHINE PROGRAM
190 X=USR(CY)
209 / GET NEXT NOTE
210 GOTO 110
225 / DATA FOR MUSIC FIRST NUMBER IN PAIR IS THE FREQUENCY,
226 / SECOND NUMBER IS THE TIME DESIRED.
230 DATA 352, .5, 352, 1, 264, .5, 352, .5, 396, 1, 264, 1, 440, .5, 396, .5, 440, .5
240 DATA 465, .5, 440, 1, 396, .5, 352, .5, 352, 1, 330, .5, 297, .5, 330, .5
250 DATA 352, .5, 396, .5, 440, .5, 330, 1, 297, .5, 297, .5, 264, 2, 528, 1, 465, .5, 440, .5
260 DATA 465, 1, 440, 1, 396, .5, 440, .5, 352, .5, 396, .5, 330, 1, 264, .5, 352, .5
270 DATA 352, .5, 330, .5, 352, .5, 396, .5, 352, 1, 264, .5, 440, .5, 440, .5, 396, .5, 440, .5, 465, .5
280 DATA 440, 1, 396, .5, 440, .5, 465, .5, 440, .5, 396, .5, 352, .5, 330, 1, 352, .5, 465, .5, 440, 1
290 DATA 396, .5, 396, .5, 396, 2

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THE PROJECT CAME TO LIFE WHEN I TRIED TO INTERFACE A TELETYPE PRINTER TO A FRIEND'S TRS-80. I FOUND OUT VERY SOON THAT THE TRS-80 DOES NOT GENERATE LINEFEEDS. THIS SAVES ENORMOUS AMOUNTS OF PAPER BUT THE LEGIBILITY IS SOMEWHAT SUBSTANDARD. THIS LED TO THE DESIGN OF A BLACK BOX WHICH CAN INTERFACE A WIDE VARIETY OF PRINTERS TO THE TRS-80 DIRECTLY OR TO THE TRS-80 INTERFACE.

THE BOX HAS THESE FEATURES:

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PARALLEL INTERFACE: CENTRONICS TYPE, CAN BE MODIFIED WITH JUMPERS TO A WIDE VARIETY OF CONFIGURATIONS.

INTERFACE TO TRS-80: CONNECTS EITHER DIRECTLY TO TRS-80 BUS (NO TRS-80 INTERFACE REQUIRED) OR TO PRINTER PORT ON THE TRS-80 INTERFACE.

DELAY AFTER CARRIAGE RETURN: MANY PRINTERS NEED A DELAY OF SEVERAL CHARACTER LENGTHS AFTER A CARRIAGE RETURN. THIS IS USUALLY TAKEN CARE OF BY SOFTWARE. THE BOX SOLVES THIS PROBLEM BY GENERATING A BUSY SIGNAL OF ADJUSTABLE DURATION AFTER A CARRIAGE RETURN.

CASE REVERSAL: THE TRS-80 DOES NOT DISPLAY LOWER CASE CHARACTERS, BUT LEVEL II BASIC ENTERS LOWER CASE WHEN THE SHIFT KEY IS PRESSED. THIS IS EXACTLY OPPOSITE TO NORMAL USAGE. THE BOX CAN BE SET TO REVERSE UPPER CASE TO LOWER CASE AND VICE VERSA. THIS FEATURE ALLOWS NORMAL TYPING.

THE BOX COMES READY TO RUN WITH CABLES TO CONNECT TO THE TRS-80 KEYBOARD OR TO THE PRINTER PORT AT THE TRS-80 INTERFACE. IT HAS ITS OWN POWER SUPPLY BUILT IN. THE CONNECTION TO THE PRINTER IS VIA A DB25P CONNECTOR.

PRESENT STATUS OF THE PROJECT (BY OCT. 20, 1978): THE HANDWIRED PROTOTYPE HAS BEEN RUNNING FOR TWO MONTHS DIRECTLY WITH THE TRS-80 (LEVEL II) AND WITH A TRS-80 INTERFACE (DISK). THE PC BOARD IS CURRENTLY BEING LAID OUT AND I HAVE MOST PARTS FOR A TEST SERIES OF 10.

HOWEVER, MY LAYOUT MAN CAUGHT PNEUMONIA AND I AM GOING ON A TRIP UNTIL DECEMBER. ALL THIS WILL OBVIOUSLY DELAY THE PROJECT. THE PRICE WILL BE BETWEEN \$100 AND \$150. I DON'T THINK THERE CAN BE ANY SIGNIFICANT DELIVERY BEFORE THE MIDDLE OF FEBRUARY, 1979. LET ME KNOW IF YOU ARE INTERESTED. WRITE TO:

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I WILL ACCEPT ORDERS FOR A WAITING LIST, BUT DO NOT SEND MONEY NOW. IN CASE YOU WOULD LIKE TO KNOW, BIGFOOT IS MY CAT.
OTTO BRADE

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10 CLS PRINT AT 25, "***** SKETCH *****"
12 REM BY STAN OCKERS 9-78
15 PRINT "DIRECTIONS:"
20 PRINT PRINT "THE COMPASS DIRECTIONS NORTH (N), SOUTH (S), "
25 PRINT "EAST (E) AND WEST (W) ARE USED. IN BETWEEN DIRECTIONS"
30 PRINT "ARE GIVEN BY THE SUMS ( NORTH EAST= N+E, SOUTH WEST= S+W)
32 PRINT "AFTER THE DIRECTION, YOU WILL BE ASKED FOR THE LENGTH"
34 PRINT "OF LINE IN THAT DIRECTION "
36 PRINT "OTHER COMMANDS CAN BE GIVEN INSTEAD OF A DIRECTION:"
37 PRINT "'D' PUTS YOU INTO DRAW MODE - LINE WILL BE DRAWN"
38 PRINT "'U' PUTS YOU INTO UNDRAW MODE - NO LINE, BUT MOVEMENT"
39 PRINT "'K' KILL - WIPE SCREEN CLEAR, DOES NOT DESTROY MEMORY"
40 PRINT "OF WHAT WAS DRAWN"
41 PRINT "'R' REDRAW - WILL REDRAW ALL THAT YOU'VE ENTERED"
43 PRINT "PRESS ENTER TO CONTINUE"
45 INPUT A$
49 I=0
50 X=64: Y=24
60 CLS
70 SET(64,24):SET(65,24)
75 F=1
80 N=1 : E=3 : S=2 : W=6 : K=9 : D=10 : U=11 : R=12
100 PRINT AT 0, "DIRECTION (N,S,E,W,N+E, ETC., D,U,K OR R)";
105 INPUT Q
120 IF Q=12 THEN 300
122 IF Q=9 THEN 50
130 IF Q=10 THEN 200
135 IF Q=11 THEN 230
140 PRINT AT 45, "LENGTH"; : INPUT L
141 A(I)=Q : I=I+1 : A(I)=L : I=I+1
142 IF F=0 THEN 170
147 FOR J=1 TO L : GOSUB 590
150 IF (X=126)+(X=0)+(Y=47)+(Y=0) THEN 100
160 NEXT J: GOTO 100
170 FOR J=1 TO L : GOSUB 580
180 IF (X=126)+(X=0)+(Y=47)+(Y=0) THEN 100
190 NEXT J : GOTO 100
200 F=1 : A(I)=1000
210 I=I+1 : GOTO 100
230 F=0 : A(I)=2000
235 I=I+1 : GOTO 100
300 A(I)=0:I=0:CLS:X=64:Y=24
305 F=1
310 IF A(I)=0 THEN 100
320 IF A(I)=1000 THEN 410
330 IF A(I)=2000 THEN 420
332 Q=A(I) : I=I+1 : L=A(I) : I=I+1
335 IF F=0 THEN 380
340 FOR J=1 TO L : GOSUB 590
350 IF (X=126)+(X=0)+(Y=47)+(Y=0) THEN 310
360 NEXT J : GOTO 310
380 FOR J=1 TO L : GOSUB 580
390 IF(X=126)+(X=0)+(Y=47)+(Y=0) THEN 310
400 NEXT J: GOTO 310
410 F=1 : I=I+1 : GOTO 310
420 F=0 : I=I+1 : GOTO 310
500 Y=Y-1
510 X=X+2:RETURN
520 Y=Y+1
530 X=X-2:RETURN
540 Y=Y+1:GOTO 510
550 Y=Y+1:RETURN
560 Y=Y-1:GOTO 530
570 Y=Y-1:RETURN
580 RESET(X,Y):RESET(X+1,Y)
590 ON Q GOSUB 570,550,510,500,540,530,560,520
600 SET(X,Y):SET(X+1,Y):RETURN

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TRS-80 Software

NEW PRODUCT ANNOUNCEMENT

CHANNEL DATA SYSTEMS PERSONAL LEDGER NOW AVAILABLE FOR RADIO SHACK'S TRS-80 LEVEL II

After a very positive response to the Personal Ledger from users of Commodore's PET and many inquiries from users of Radio Shack's TRS-80, Channel Data Systems has adapted the Personal Ledger to the TRS-80 Level II personal computer.

Channel Data Systems' Personal Ledger is a complete double entry bookkeeping system with provisions for budgeting and keeping records of income, deductible and non-deductible expenses, assets and liabilities. Its simple interactive features enable entering transactions, adding or editing accounts, and printing of a detailed Income Statement and Balance Sheet. Users completely unfamiliar with computerized accounting and with little or no knowledge of bookkeeping can use the system.

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The Personal Ledger runs in 8K bytes of free RAM on Commodore's PET and 16K bytes on Radio Shack's TRS-80 Level II. Level II BASIC is a version of Microsoft BASIC which can be translated to most other BASIC systems with minimum modifications.

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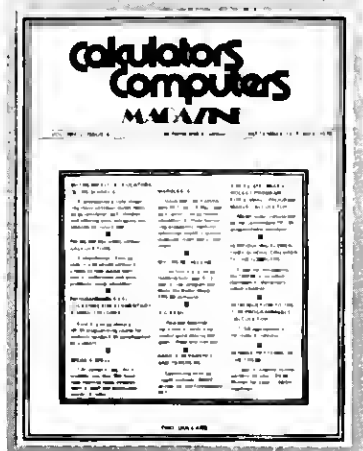
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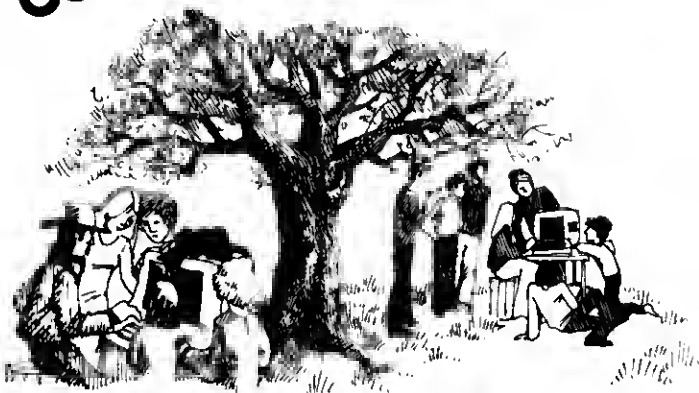
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By George, I did it!

A few months ago I said that in August I would publish a list of all the cassettes of software available for trade or sale for the TRS-80. Sure enough, I searched through the computer magazines for software advertisements, compiled the list, and printed it in mid-August, right on schedule. I may not have listed all the TRS-80 software on cassettes, but I sure got a lot.

Well, it's time to try again. In the three months since the last list was published, a whole lot of TRS-80 programs have been written. By mid-November, I should have a much larger and more complete list ready to send to you. Being a capitalist,

I charge two whole dollars for the list (postpaid). If after you get it, you don't think it is worth it, I'll refund your money. Can't go wrong there, can you?

If you want to subscribe to this quarterly publication, starting with the November issue, send me \$9.00 (before I run out of copies toward the end of November). Otherwise the February issue will be \$4.00 and the subscription rate starting with the February issue will be \$12.00. (No, that's not inflation; it's just that the list is getting so long that I have to charge that much.) So order now while it's still cheap.

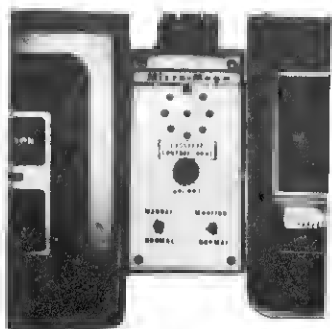
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00200 : FILE NAME MEMSCR
00300 : ENTRY PT : 4410 HEX. 17424 DECIMAL
00400 : PRINTS ASCII VALUE OF 1K CHUNK OF
00500 : MEMORY WHICH CAN SCROLL UP OR DOWN
00600 : USING KEYBOARD ARROWS PROGRAM
00700 : BEGINS AT 0000H AND REPEATS WHEN
00800 : FFFFH (64K) IS REACHED EACH KEY-
00900 : STROKE SCROLLS 4 LINES.
4410      01000      ORG      4410H
4410 31FD4F 01100      LD      SP,4FFDH; INIT. STACK
      01200 : NOTE: 3840H IS TRS-00 FUNCT. KEY COL.
4413 D0214030 01300 KBD      LD      IX,3040H
4417 D04600      01400      LD      B,(IX)
441A C05544      01500      CALL   DLY
441D D07E00      01600      LD      A,(IX)
4420 B8          01700      CP      B; CHECK DEBOUNCE
4421 20F0        01800      JR      NZ,KBD
4423 FE08        01900      CP      00H; UP ARROW
4425 2009        02000      JR      NZ,DOWN
4427 FD214A44 02100      LD      IV,BYTE
442B FD3400      02200      INC     (IX)
442E 1810        02300      JR      SUB
4430 D07E00      02400 DOWN   LD      A,(IX)
4433 FE10        02500      CP      10H; DOWN ARROW
4435 2009        02600      JR      NZ,KDN
4437 FD214A44 02700      LD      IV,BYTE
443B FD3500      02800      DEC     (IX)
443E 1008        02900      JR      SUB
4440 AF          03000 KDN     XOR     A; ZERO A
4441 D0BE00      03100 HERE   CP      (IX); IS KEY ACTIVE?
4444 28CD        03200      JR      Z,KBD; IF NO THEN LOOP
4446 20F9        03300      JR      NZ,HERE; IF YES STAY HERE
444B 21B8        03400 SUB     DEFW   21H; FAKE OUT
444A 00          03500 BYTE    DEFB   00H; THIS BYTE CHANGES
      03550 : SCREEN MEMORY STARTS AT 3C00H AND STORES
      03555 : 400H BYTES OF DATA.
444B 11003C      03600      LD      DE,3C00H; DESTINATION
444E 010004      03700      LD      BC,400H; COUNTER
4451 ED00        03800      LDIR    ; TRANSFER DATA BLOCK
4453 18EB        03900      JR      KDN
4455 F5          04000 DLY     PUSH   AF
4456 210001      04100      LD      HL,100H; DEBOUNCE DELAY
4459 2B          04200      DEC     HL
445A 7C          04300      LD      A,H
445B B5          04400      OR      L
445C 20FB        04500      JR      NZ,DLY+4; DEC HL TO B
445E F1          04600      POP     AF
445F C9          04700      RET
4410      04000      END      KBD-3
00000 TOTAL ERRORS
HERE      4441
KDN       4440
SUB       444B
BYTE      444A
DOWN      4430
DLY       4455
KBD       4413

```

Dear Gordon,

Here are a number of observations about the TRS-80 that may be useful to some of your readers with Level II:

Not all string variables are placed into the string space buffer at the end of the RAM! If a string variable receives its value via a READ statement, or from a simple assignment to a string constant (i.e., `A$="HELLO"`), then it takes up no space in the buffer. Also, any variable set equal to such a variable also takes no space in the buffer. The first time I noticed this, I thought there was a problem with the `FRE()` subroutine, and it took me a while to figure out what was going on: the string address (partially described on page 8/9 of the Level II manual) is an address of a byte, not in the string buffer, but in the program, namely, the first byte of the constant in the DATA or replacement statement. It makes sense, since there's no reason to have two copies of the same string, one in the program, and one in the buffer.

This description of the `USR` function says that the machine language executes a `CALL 0A7F` to get the value of the argument, but does not say how it is returned. I've experimented a bit, and found that it is returned in the HL register pair.

Not that it matters much, but if you type a letter on the keyboard with the SHIFT key pressed, you get a lower-case letter (SHIFT-é is an acute accent), but these are all displayed as upper case (and @) on the screen.

Instead of a character enclosed in quotes, the `CLOAD` and `CSAVE` commands will accept `CHR$(n)`, where n is an integer from 1 to 255 (zero is not useful). For that matter, a string variable will work, too. The first character of the string will be used for the string defining the name of the file.

Sorry, Roy Hempel, but you won't get any 4x characters out of your TRS-80, or a mixture of 2x and 1x either. Expanded characters are produced by the hardware, and there are only the two modes. By the way, in the 32-character mode, characters or graphics at even-numbered addresses are expanded to fill two locations, and the other characters are ignored. Software usually handles this nicely, but plotting while in the 32-character mode is a pain.

The manual (page 11/2) suggests poking graphics onto the screen to save time. An even faster way is to `PRINT` them! Try `PRINT STRING$(64,181)` for a fast example. Set up your plots as strings by packing six plotting dots into one character, and concatenating characters into strings, and you can set up 255 characters of six dots each with a single `PRINT` statement. For each character position to have plotting dots in it, assign the value `CHR$(128+n)`, where n is the sum of numbers corresponding to the positions where you want a white spot.

1	2
4	8
16	32

It seems that no matter how cheap a tape I use, my TRS-80 can always get programs on and off, though sometimes with a moderate amount of difficulty, like with the three C-60 tapee (made in Mexico) for \$1.29 that I found somewhere...

There are rumore about that a elight hardware mod that adde a 1Kx1 RAM chip and rewires a few exiing chips can add lower-case dieplay on the Level II. The video RAM, locations 3C00 to 3FFF, is only seven bits wide. (There are eight bits in a byte, numbered 7 through 0.) Bit 6 of the video RAM simply isn't there. However, if you go PEEKing and POKEing in there, this fact is not obvious. Although bit 6 is discarded when you store a byte there, the bit is read back as the NOR of bite 7 and 5.

Whereas Level I Basic comparison operators returned a value of 1 to indicate "true", Level II returns -1. That one caught me a few times.

To make the Radio Shack Blackjack (either level) a bit smarter with regard to which bets it will accept, go ahead and add the necessary code. Make up for it by deleting the code that displays the cards already played, since that function is very unrealistic.

Level II T-BUG differs from Level I in more ways than listed in the manual. The useful subroutines are not in the same locations, but if you can sneak a peek at the Assembler/Editor manual, it will give you some you can use. Also, the register-save area starts at location 4825 on Level II.

The USR function can be very helpful to those who know machine-language. One of my programs ran for something like eight hours when written in Basic; by writing the main subroutine in machine, I got it to run in eight minutes.

Comments and criticisms on the above are welcome, and I feel competent enough (I've been a professional programmer for 10, these seven years) to answer most questions about Basic, etc., that any of the members may have, if they would be so kind as to enclose a stamped, self-addressed envelope.

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Dear Gordon,

Here are some tips for using Level II that may not be too obvious to all users.

1. The POINT argument in Level I returns a 1 if on, and a 0 if off. In Level II it returns a -1 if on, and a 0 if off. This can cause some very strange problems on conversion from Level I to Level II tapes.
2. To erase a line in Level II, just plain PRINT " " won't work unless you put 64 spaces between the quotes. Instead use PRINT @ 512,;CHR\$(30) to erase a full line at mid=screen.
3. When using tabs, don't put a space between the word TAB and its number:
WRONG.....PRINT TAB (10)
RIGHT.....PRINT TAB(10)
4. If you enter programs directly from a magazine, etc. be aware that many BASICs use RND(1) to get a random number between 0 and 1 (such as .0125). Radio Shack BASIC (both Levels), however, use RND(0) to obtain the same thing. RND(1) will always return a 1.
5. If you have defined a letter variable as DOUBLE PRECISION, don't attempt to use it as the counter in a FOR....NEXT loop:
EXAMPLE..... 10 DEFDBL A-Z
 20 FOR Z=1TO1500:NEXT Z
The above won't work because Z must be an integer to be used as a FOR....NEXT counter.

Hope this information is of some help to all.

Sincerely,

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```

10 REM WRITTEN BY JOHN MARLER SAN JOSE, CA
11 REM LINE 22 SHOULD BE CHANGED TO THE ACCURACY OF EACH UNIT
12 REM ON THE TIMING LOOP. LINES 130 AND 140 SET STARTING COUNT
20 CLS:PRINT:PRINT:PRINT
21 PRINTTAB(21);"TELEPHONE TOLL ACCUMULATOR":PRINT:PRINT
25 INPUT"DO YOU WISH INSTRUCTIONS (1=YES, 2=NO)";A
26 IFA=1GOTO300
28 CLS:PRINT:PRINT:PRINT
29 PRINTTAB(21);"TELEPHONE TOLL ACCUMULATOR":PRINT:PRINT
30 INPUT"WHAT IS THE INITIAL TIME PERIOD (MINUTES)";P
35 PRINT:PRINT
40 PRINT"FOR THE FOLLOWING ENTRIES DO NOT ENTER DECIMALS!- - -"
41 PRINT"ENTER ALL NUMBERS AS INTEGERS-($1.35 IS ENTERED "
42 PRINT"AS 135; $2.12 IS '212', ETC)":PRINT
43 INPUT"WHAT IS THE INITIAL CHARGE ";I
45 PRINT:PRINT
50 INPUT"WHAT IS THE ADDITIONAL CHARGE PER MINUTES ";M
51 CLS:PRINT:PRINT
55 PRINT"WHEN THE OTHER END PICKS UP THE RECEIVER"
57 INPUT"PRESS ENTER TO START TIMING. . . . .";A$
60 CLS:PRINT:PRINT
80 PRINT"THE INITIAL COST OF THE FIRST ";P;" MINUTES IS $";I/100
85 PRINT" THE ADDITIONAL COST PER MINUTE IS:$";M/100
90 PRINTAT(847);"PRESS 'BREAK' TO STOP COUNTING."
100 C=I/100:D=1
110 FORX=22TO93
115 SET(X,22):SET(X,20):NEXTX
120 FORY=22TO28
125 SET(22,Y):SET(93,Y):NEXTY
130 T=56
140 IFP=3THEN T=176
150 GOTO221
200 PRINTAT(526);"THE TOTAL CHARGE NOW IS: $";C
210 SET(93,24):SET(93,25):SET(93,26)
215 PRINTAT(651);"TOTAL TIME CHARGED IS NOW: ";P+D;" MINUTES"
220 T=59:D=D+1
221 C=C+(M/100)
225 FORX=1TO490:NEXTX
230 PRINTAT(330);"SECONDS TO NEXT ADDITIONAL CHARGE: ";T
240 T=T-1
245 IFT=-1GOTO200
250 GOTO225
300 CLS:PRINT"YOUR CHARGES ARE CALCULATED ON 3 THINGS:"
310 PRINTTAB(10);"(1) INITIAL TIME PERIOD (1 OR 3 MINUTES)"
320 PRINTTAB(10);"(2) INITIAL CHARGE FOR INITIAL PERIOD"
330 PRINTTAB(10);"(3) ADDITIONAL CHARGE PER MINUTE AFTER"
335 PRINTTAB(14);"INITIAL TIME PERIOD"
340 PRINT:PRINT"IF YOU USE AN OPERATOR TO ASSIST,THE INITIAL"
350 PRINT"TIME PERIOD IS 3 MINUTES.DIRECT DIAL IS 1 MINUTE."
360 PRINT:PRINT"THE CHARGES ARE BASED UPON THE DESTINATION CALLED. . . ."
370 PRINT". . . THESE ARE 'USUALLY' LISTED IN THE FRONT OF THE PHONE"
380 PRINT"BOOK. . . OR. . . CALL THE OPERATOR FOR RATES."
390 PRINT"DO YOU WANT INFORMATION ON DISCOUNT PERIODS"
400 INPUT"(1=YES, 2=NO)";B
410 IFB=2GOTO208
420 CLS:PRINT"THERE ARE TWO DISCOUNT PERIODS IN THE CONT. U. S. "
430 PRINTTAB(22);"35% DISCOUNT: 5PM - 11PM SUN THROUGH FRI"
440 PRINTTAB(22);" 8AM - 11PM ALL HOILDAYS":PRINT
450 PRINTTAB(22);"65% DISCOUNT: 11PM - 8AM EVERY NIGHT"
460 PRINTTAB(22);" 8AM - 11PM SATURDAY"
470 PRINTTAB(22);" 8AM - 5PM SUNDAYS"
475 PRINT:PRINT"CHARGES BASED ON TIME AT CALLING POINT ORIGIN!"
476 PRINT:PRINT:PRINT
480 INPUT"PRESS ENTER TO INPUT TIME AND CHARGE INFORMATION. . . ";A$
490 GOTO28

```

```

4 REM * P M =738 OR 13026 *
5 REM * RADIO SHACK TRS-80 COMPUTER SCREEN DISPLAY *
6 REM * COPYRIGHT FRED BLECHMAN 1978 *
7 REM * 23958 ARCHWOOD ST , CANOGA PARK, CA 91307 *
8 REM * LOOP VALUES *
10 DATA6,14,9,19,26,9,30,38,9,42,43,9,47,54,9,65,72,9
20 DATA76,77,9,84,85,9,89,96,9,101,108,9,112,113,9,119,121,9
30 DATA6,14,12,18,27,12,30,31,12,38,39,12,42,43,12,46,47,12
40 DATA54,55,12,65,72,12,76,85,12,88,97,12,108,101,12,112,117,12
50 DATA6,7,15,14,15,15,18,19,15,26,27,15,30,38,15,42,43,15
60 DATA47,54,15,65,72,15,76,77,15,84,85,15,88,89,15
70 DATA96,97,15,101,108,15,112,113,15,119,121,15
80 DATA30,39,20,42,50,20,55,62,20,75,82,20,87,94,20
98 DATA34,35,23,42,50,23,55,62,23,68,71,23,74,83,23,86,87,23
100 DATA94,95,23
118 DATA34,35,26,42,43,26,50,51,26,55,62,26,75,82,26,87,94,26
120 DATA17,24,31,29,36,31,40,42,31,47,49,31,52,60,31
130 DATA64,65,31,72,73,31,76,85,31,88,97,31,100,108,31
148 DATA16,17,34,28,29,34,36,37,34,48,41,34,44,45,34,48,49,34
150 DATA52,60,34,64,65,34,72,73,34,80,81,34,88,95,34,100,108,34
160 DATA17,24,37,29,36,37,40,41,37,48,49,37,52,53,37
170 DATA65,72,37,80,81,37,88,97,37,108,101,37,108,109,37
200 REM * SINGLE SETS *
210 DATA39,6,7,14,15,18,19,26,27,30,31,38,39,42,43,46,47,54,55
220 DATA64,65,72,73,76,77,84,85,88,89,96,97,100,101
230 DATA108,109,112,113,117,118,119
240 DATA35,6,7,14,15,18,19,26,27,30,31,38,39,42,43,46,47,54,55
250 DATA64,65,76,77,84,85,88,89,96,97,100,101,112,113,116,117,118
255 DATA1,6
260 DATA35,6,7,12,13,18,19,26,27,30,31,38,39,42,43,46,47,54,55
270 DATA72,73,76,77,84,85,88,89,96,97,100,101,112,113,116,117,118
280 DATA40,6,7,12,13,14,18,19,26,27,30,31,38,39,42,43,46,47,54,55
290 DATA64,65,72,73,76,77,84,85,88,89,96,97,100,101,108,109
300 DATA112,113,117,118,119
310 DATA18,34,35,42,43,50,51,54,55,62,63,74,75,82,83,86,87,94,95
320 DATA16,34,35,42,43,50,51,54,55,74,75,82,83,86,87,94,95
330 DATA1,34
348 DATA16,34,35,42,43,48,49,62,63,74,75,82,83,86,87,94,95
350 DATA19,34,35,42,43,48,49,50,54,55,62,63,74,75,82,83,86,87,94,95
360 DATA32,16,17,24,25,28,29,36,37,40,41,42,43,46,47,48,49
370 DATA52,53,60,61,64,65,72,73,80,81,88,89,100,101,108,109
380 DATA28,16,17,28,29,36,37,40,41,44,45,48,49,52,53,60,61,64,65
390 DATA72,73,80,81,88,89,100,101,108,109
400 DATA1,16
410 DATA24,16,17,28,29,36,37,40,41,48,49,52,53,64,65,72,73
420 DATA80,81,88,89,100,101,106,107
430 DATA27,16,17,24,25,28,29,36,37,40,41,48,49,52,53
440 DATA64,65,72,73,80,81,88,89,100,101,106,107,108
500 REM * MAIN PROGRAM *
504 Z=8
505 CLS:RESTORE
506 IF Z=0 GOTO520
510 CLS:RESTORE
511 FOR Y=0 TO 47
512 FOR X=0 TO 127
513 SET(X,Y)
514 NEXTX:NEXTY
520 FOR J=1 TO 89
530 READ A,B,Y
540 FORX=A TO B
545 IF Z=1 THEN RESET(X,Y):GOTO560
550 SET(X,Y)
560 NEXTX:NEXTJ

```

```

600 GOSUB600
610 GOSUB690
620 GOSUB700
630 GOT0900
680 FOR Y=10 TO 14
685 GOT0705
690 FOR Y=21 TO 25
695 GOT0705
700 FOR Y=32 TO 36
705 READ A
710 FORX=1 TO A
715 IF Z=1 THEN READ B:RESET(B,Y):GOT0730
720 READ B:SET(B,Y)
730 NEXTX:NEXTY
740 RETURN
900 PRINT00;
905 IF Z=1 THEN Z=0:GOT0910
906 IF Z=0 THEN Z=1
910 FOR X=1 TO 1000:NEXTX
920 GOT0505

```

HERE ARE A COUPLE OF SHORT CONTROL LINES THAT MAY BE OF INTEREST TO OTHER USERS.

LN# = LINE NUMBER

NLN = NEXT LINE NUMBER

FLN = FIRST LINE NUMBER

THIS ONE WILL STOP THE SCROLLING AT ANY NUMBER OF LINES (I USE 12)

LN# T=T+1:IF T>12 THEN (NLN) ELSE INPUT T:T=0

THIS ONE WILL RERUN OR END AND WITH MODS CAN DO OTHER SPLIT DECISIONS

LN# A\$="":INPUT "DO YOU WISH TO DO ANOTHER (Y/N)"A\$

NLN IF A\$= 0 THEN (FLN) ELSE IF A\$<> 0 (LN#):END

THESE ARE IN USE ON LEVEL II BUT THE FIRST WILL WORK ON LEVEL I

BY CHANGING ELSE TO : (I THINK).

CAN ANYONE GIVE ME THE FOLLOWING INFO ON THE CABLE BETWEEN THE

EXPANSION PORT AND THE CENTRONICS PRINTER : PIN# 1-21-23-25-26-28

FROM EXP. PORT CONNECT TO PINS# ? ? ? ? ? ? ON THE CENTRONICS PLUG.

DON FIELDING, 2207 NW 61 PLACE, MARGATE, FL 33063

I HAVE A 16K LEVEL I TRS-80

WOULD LIKE TO TRADE PROGRAMS. SEND ME A 60 MINUTE TAPE & I WILL

RETURN A 60 MINUTE TAPE. I SHOULD HAVE LEVEL II ANY DAY.

J.W. TAYLOR, 611N2, CABOT, AR 72023

I HAVE ABOUT 50 PROGRAMS

* 16K RAM * 16K RAM * 16K RAM * 16K RAM * 16K RAM *

UP-GRADE YOUR TRS-80 TO 16K MEMORY OR ADD RAM TO YOUR EXPANSION INTERFACE. 16K RAM FOR ONLY \$124.50

OR 32K FOR ONLY \$215.50 + \$2.00 SHIPPING/HANDLING.

SEND TO: TRS-80 USERS GROUP, 7554 SOUTHGATE RD.

FAYETTEVILLE, NC 28304 (919) 867-5822

MAKE CHECK PAYABLE TO THE: TRS-80 USERS GROUP

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7554 SOUTHWIDE RD.
FAYETTEVILLE, MD 28104
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